

Utah State University

DigitalCommons@USU

Co

Bee Lab

12-1-1907

New North American Hymenoptera

J. C. Crawford

Follow this and additional works at: https://digitalcommons.usu.edu/bee_lab_co



Part of the [Entomology Commons](#)

Recommended Citation

Crawford, J. C., "New North American Hymenoptera" (1907). Co. Paper 199.
https://digitalcommons.usu.edu/bee_lab_co/199

This Article is brought to you for free and open access by the Bee Lab at DigitalCommons@USU. It has been accepted for inclusion in Co by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.



Cwfd 1907

JOURNAL

OF THE

New York Entomological Society.

VOL. XV.

DECEMBER, 1907.

No. 4.

Class I, HEXAPODA.

Order I, HYMENOPTERA.

NEW NORTH AMERICAN HYMENOPTERA.

BY J. C. CRAWFORD,

WASHINGTON, D. C.

Superfamily CHALCIDOIDEA.

Subfamily MONODONTOMERINÆ.

The genus *Diomorus* Walker has the mesepisternum deeply incised above the middle and will therefore have to be placed in the Toryminæ, where it can be separated from the other genera by the tooth on the hind femora. In his classification of the Chalcidoidea, Dr. Ashmead has used the presence or absence of teeth on the hind femora as a secondary character to separate the Toryminæ and the Monodontomerinæ. This will have to be dropped or at least modified to show the above exception.

The following table will separate the winged forms belonging to the subfamily and define three new genera. The table has been made to include all of the genera which were put in this group by Dr. Ashmead, except *Diomorus*, to show more clearly the affinities of the new genera.

TABLE OF GENERA OF MONODONTOMERINÆ.

1. Antennæ with two ring joints.....	<i>Plesiostigmodes</i> Ashm.
Antennæ with only one ring joint.....	2
2. Scutellum with a cross furrow before apex.....	3
Scutellum without a cross furrow before apex.....	5

3. Apical margin of first abdominal segment not incised medially.

Monodontomerus Ashm.

- Apical margin of first abdominal segment incised medially.....4
4. Hind femora with two large teeth.....*Physothorax* Mayr.
Hind femora with one large tooth.....*Plesiostigma* Mayr.
5. Metathorax with spiracular sulci.....*Hemitorymus* Ashm.
Metathorax without spiracular sulci.....6
6. Occipital foraminal depression immargined.....7
Occipital foraminal depression margined... ..8
7. Metathorax in ♀ with two medial carinae, area between smooth but basad with two foveae separated by a short carina; in ♂ the carinae weak; first abdominal segment deeply incised medially.....*Ditropinotus* gen. nov.
Metathorax not with two medial carinae; first abdominal segment not deeply incised medially*Microdontomerus* gen. nov.
8. Apical margin of first abdominal segment not incised medially.....9
Apical margin of first segment incised medially.....10
9. Eyes conspicuously hairy.....*Oligosthenus* Först.
Eyes not conspicuously hairy.....*Cryptopristus* Först. ♂
10. Wings without a stigmal cloud.....11
Wings with a stigmal cloud*Cryptopristus* Först. ♀
11. Hind femora with a large tooth or prominent dentiform angle; metathorax not with two medial carinae.....12
Hind femora without a large tooth or dentiform angle; metathorax with two medial carinae ♀, in ♂ obsolete.....*Eridontomerus* gen. nov.
12. Hind femora basad of large tooth distinctly serrate.....*Websterellus* Ashm.
Hind femora basad of large tooth not with small teeth or serrations.

Holaspis Mayr.

Ditropinotus, new genus.

Type. — *D. aureoviridis* Crawford.

The punctures of the head and thorax are thimble-like; hind femora with a few minute saw-like teeth; antennae ♀ with the club only slightly thicker than funicle, in ♂ not thicker; joints of antennae loosely put together; abdomen in ♀ triangularly produced beneath; metathorax wrinkled; a basal fovea laterad of each carina; coxal cavities and place of insertion of abdomen above with a strong carinate ridge.

Ditropinotus aureoviridis, new species.

♀. — Head and thorax golden green, pleurae more or less, under sides and abdomen dark honey color; punctures of head and thorax coarse, strong; antennae dark, scape more or less and club almost orange color; from between antennae to apex of clypeus a more or less distinctly elevated ridge; legs testaceous, hind femora, except tips, and hind tibiae, except apices, almost the color of the abdomen; front coxae testaceous; middle coxae slightly and hind almost entirely, greenish; abdomen transversely lineolate, with some green laterally at times, compressed, ovipositor about half as long as the abdomen. Length 3–3.5 mm.

♂. — Entirely green, not so yellowish in color as the ♀, antennæ all dark, legs testaceous, coxæ and femora except apices green; sculpture of abdomen coarser than in ♀. Length about 2 mm.

Locality. — Hudson, Mich., Webster, No. 3375 (W. J. Phillips coll.); Richmond, Ind., Webster, No. 2216 (W. J. Phillips coll.) all from *Isosoma* in wheat.

Type. — No. 10043, U. S. National Museum.

Microdontomerus, new genus.

Type. — *Torymus anthonomi* Crawford, Can. Ent., XXXIX, 133, 1907.

The head and thorax with thimble-like punctures, the antennæ slightly clavate, the joints fitting closely, metathorax with a median carina and several short ones on each side of the median one; teeth on hind femora minute.

Eridontomerus, new genus.

Type. — *E. primus* Crawford.

Punctures of head and thorax thimble-like; antennæ distinctly clavate, the joints close fitting; hind femora with small teeth, two or three of the largest distinctly almost semicircularly emarginate at apex; metathorax similar to *Ditropinotus*.

Eridontomerus primus, new species.

♀. — Head and thorax rather brassy green, face bronzy; abdomen black tinged with brassy on sides; antennæ dark becoming reddish apically; punctures of head and thorax coarse; femora except tips black with greenish reflections; tibiæ medially brown, tips of femora, bases and apices of tibiæ testaceous, tarsi whitish; carinæ of metathorax strong, foveæ between the carinæ not deep, the outer ones very distinct; rest of metathorax finely roughened; abdomen reticulately lineolated. Length about 2.5 mm.

♂. — Similar to ♀ but green brighter, not brassy; femora and hind tibiæ except bases and tips green; knees, tibiæ and tarsi whitish; antennæ dark, the tips only slightly lighter. Length 1.5–2 mm.

Locality. — Richmond, Ind., bred from *Isosoma* in timothy (W. J. Phillips), Webster, Nos. 2895 and 2207.

Type. — No. 10044, U. S. National Museum.

Tribe PEDIOBIINI.

Eriglyptus, new genus.

Type. — *E. robustus* Crawford.

Form robust, convex, head and thorax with coarse thimble-like punctures, antennæ 8-jointed with no ring joint, the joints loosely joined, club 3-jointed hardly

thicker than the funicle, the last joint reduced almost to a spine; face when viewed from above slightly convex, vertex meeting the occiput in a sharp carina extending from eye to eye; submarginal vein long but not as long as the marginal, stigmal knob sessile, postmarginal vein hardly longer than the stigmal knob; metathorax with a distinct median carina; petiole of abdomen very short the abdomen being almost sessile, abdomen of ♀ about as long as the head and thorax, of ♂ about as long as the thorax.

Most closely related to *Nesomyia* but differs in the convex form, absence of ring joint, short postmarginal vein, carinate vertex, convex face (in *Nesomyia* the face viewed from above is strongly concave), etc.

***Eriglyptus robustus*, new species.**

♀. — Length 2.5 mm. Head and thorax blue, with green reflections in places, face and under parts deeper blue, almost purple in places, dorsum of thorax except lateral areas of mesothorax mostly æneous; antennæ blue; abdomen blue, with greenish in places; legs blue, tibia apically and tarsi except the dark apical joint, white.

♂. — Length 2 mm.; similar to ♀ but above mostly green, face with green, pleuræ and below blue; abdomen basally with a white spot.

Locality. — Washington, D. C., parasite of *Anthonomus nigrinus*.

Type. — No. 10045, U. S. National Museum.

Tribe ENTEDONINI.

***Horisemus lixivorus*, new species.**

♀. — Head and thorax dark olive green above, the scutellum often dark purplish; face and under parts of thorax coppery green; abdomen black, shiny, base of first segment greenish; mesonotum and scutellum finely reticulated; coxæ and femora green, tibiæ dark; tips of femora, bases and apices of tibiæ and tarsi, except apical joint, whitish; petiole of abdomen very short; first segment of abdomen over one third the length of abdomen, apically finely reticulated as are the remaining segments. Length about 1.75 mm.

♂. — Similar except for sexual characters. Length about 1.25 mm.

Type locality. — Dallas, Texas, Oct. 2, 1906, bred from *Lixus musculus* (W. D. Pierce); also from Victoria, Texas, Apr. 4-7 (W. E. Hinds coll.).

Type. — No. 10046, U. S. National Museum.

The dark legs readily separate this species from the others, except *microgaster*, which has the first segment of the abdomen over one half the length of abdomen and punctured apically.

Tribe TETRASTICHINI.

***Aprostocetus diplosidis*, new species.**

♀. — Black, shiny, eyes reddish brown; antennæ brown; sculpture of mesothorax exceedingly minute longitudinal lines, making the surface silky in appearance;

median groove very apparent; parapsidal grooves very deep; grooves on scutellum very plain; femora and coxæ dark, bases and apices of femora, and rest of legs yellow; abdomen very finely reticulately lineolated, about twice as long as the head and thorax combined. Length including ovipositor about 2 mm.

♂. — Very similar to the ♀ but the abdomen only as long as the head and thorax together. Length about 1 mm.

Locality. — Bred from *Diplosis sorghicola*, collected at Baton Rouge, La. (Webster No. 3630).

Type. — No. 10929, U. S. National Museum.

Differs from *americanus* in the very apparent median groove on the mesothorax; from *granulatus* in the sculpture of the mesothorax.

Superfamily ICHNEUMONOIDEA.

Urosigalphus bruchi, new species.

♀. — Black, head and thorax rather finely rugoso-punctate; antennal grooves deep, reaching to vertex; antennæ 14-jointed, reddish, reaching to metathorax; median area of mesothorax coarsely rugose, lateral areas shiny, finely sparsely punctured; scutellum strongly elevated, viewed laterally its outline sharply angulated; median carina of metathorax ending in a sharp, short projection; scutellum, post-scutellum and base of metathorax rugose; truncation sparsely rugoso-punctate; hind coxæ large; hind femora robust, their tarsi dusky; wings dusky, nervures light, stigma large, dark; longitudinal striæ on abdomen distinct for about two thirds the length of the abdomen; ovipositor about one third the length of abdomen; apex of abdomen produced to two short spines. Length 3.75–4 mm.

♂. — Similar, antennæ reaching one third distance to apex of abdomen; abdomen at apex only indistinctly spined. Length 3.75 mm.

Locality. — Victoria, Texas, bred from *Bruchus* in *Prosopis*.

Type. — No. 10047, U. S. National Museum.

This species is the size of *anthonomi* but is easily distinguished by the absence of the pyramidal area between the ocelli and by the sharply elevated and angulated scutellum (in *anthonomi* the scutellum seen in profile is rounded above).

Superfamily APOIDEA.

Neolarra congregatus, new species.

♀. — Head and thorax black, coarsely, deeply and closely punctured, closely covered with scale-like pubescence almost concealing the surface, grayish above white on pleuræ; facial quadrangle broader than long; punctures on clypeus smaller, mandibles reddish apically; flagellum dull reddish beneath; tegulæ large, black, punctured all over; legs dark, knees and tibiæ apically, somewhat reddish; abdomen with segments 1–4 red, apical segments darker, all closely coarsely and deeply punctured; segments 1–5 with bands of white appressed pubescence on the apical margins; venter red. Length 5–5.5 mm.

♂. — Similar, differing in sexual characters; segments 1-6 having bands on apical margins. Length 5-5.5 mm.

Locality. — Cotulla, Texas, May 9, 1906, on *Verbesina encelioides* (F. C. Pratt and J. C. Crawford colls.).

Type. — No. 10049, N. S. National Museum.

The specimens were almost always found congregated on particular flower heads, from six to ten often being taken on a single head. Nor were any found on other flowers of the same species growing just across the road, although they were very abundant in the field where the specimens were collected.

This species differs from *verbesinæ* by the darker colored abdomen, the stronger punctures on the abdomen, the dark tegulæ and legs.

***Conanthalictus cotullensis*, new species.**

♀ ♂. — Green, with a strong silky luster, head and thorax tessellate; mandibles yellowish, the tips red; clypeus apically black, fringed with long hairs; antennæ brown, lighter below, in the ♀ reaching to prothorax, in the ♂ to the tegulæ; tegulæ yellowish hyaline; wings smoky hyaline, nervures light, stigma brown; meta-thorax with very close, fine punctures, the surface like a small honeycomb; legs dark, femora with a greenish luster, tibiæ apically and tarsi reddish; abdomen green-very strongly silky from very minute transverse lines; broad apical margins of segments brownish; apical fimbria sooty brown. Length about 3.5 mm.

Locality. — Cotulla, Texas, May 10, 1906, on *Marilaunidium organifolium* (F. C. Pratt and J. C. Crawford colls.).

Type. — No. 10048, U. S. National Museum.

This species was compared with *conanthi* by Professor Cockerell and said to differ by its smaller size, dark tibiæ, darker stigma and nervures and greener color.

In this species the relative lengths of the joints of the maxillary palpi are 6, 9, 12, 12, 8, 8; of the labial palpi 8, 4, 4, 6; the tongue is more elongate than in *Halictus*. There is not a trace of an anal rima in the female in this or the other species of the genus.

***Sphecodosoma*, new genus.**

Type. — *S. pratti* Crawford.

In appearance like the genus *Sphecodes* but the basal nervure is only gently curved, the mouth parts elongate, the tongue linear, about ten times as long as broad, the scopa strong; insertion of antennæ less than one third the distance from clypeus to ocelli; the labial palpal joints have the following relative lengths: 25, 17, 12, 12; the maxillary palpi 21, 60, 60, 20, 16, 16; mandibles dentate.

Sphecodosoma pratti, new species.

♀. — Head and thorax black, shiny, abdomen dark red; pubescence sparse, rather long, glistening white; head elongate, facial quadrangle slightly longer than wide; eyes narrow, inner orbits straight parallel; head almost impunctate; clypeus produced, with a few punctures; mandibles red, bases black; antennæ clavate, funicle reddish below, scape reaching about one half way to ocelli; mesothorax slightly lineolated, scutellum more plainly so, both finely sparsely punctured more closely so at posterior edges; median and parapsidal grooves apparent but not deep; metathorax basally with fine rugulæ not reaching to apex, leaving a smooth shiny margin; truncation smooth, not surrounded by a carina; mesopleuræ smooth, indistinctly lineolated, metapleuræ distinctly so; tegulæ large, shiny, black inwardly, the rest translucent; wings dusky, nervures and stigma dark brown; third submarginal narrowed one half to marginal; legs black, femora robust, pubescence glistening white; first segment of abdomen black at base, smooth, sparsely punctured, remaining segments sparsely punctured, finely lineolated; pubescence on fifth segment at apex, sooty brown. Length 4 mm.

♂. — Similar, antennæ not clavate, reaching almost to metathorax, more yellowish below, abdomen black. Length 4 mm.

Locality. — Cotulla, Texas, May 10, 1906, on *Marilaunidium organifolium* (F. C. Pratt and J. C. Crawford colls.).

Type. — No. 10050, U. S. National Museum.

It resembles the genus *Proteraner* in that both sexes come out at the same time in the spring, which is not the case in the other forms.

NOTES ON SOME SPECIES OF THE GENUS HALICTUS.

By J. C. CRAWFORD,

WASHINGTON, D. C.

The species included in this paper are those which have no green on them and which are found in the United States and Canada. In using the table it will be necessary to consult the detailed descriptions of the species before one can be certain of the identifications, since there are still many undescribed forms in North America.

TABLE FOR THE FEMALES.

1. Apical margins of abdominal segments with hair bands; none of the wing veins obsolescent.....	2
No hair bands on apical margins of segments; some of the wing veins obsolescent.....	5
2. Cheeks armed with a strong spine.....	<i>ligatus</i> Say.
Cheeks not armed.....	3

3. Legs mostly red.....*parallelus* Say.
Legs mostly dark ; red, if any, confined to hind legs.....4
4. Hair bands cream colored, very broad ; tegulæ almost impunctate.
farinosus Smith.
Hair bands white, narrow ; tegulæ punctured except medially.
lerouxii Lepeletier.
5. Second transverse cubital not obsolescent.....6
Second transverse cubital obsolescent.....16
6. Base of metathorax finely wrinkled.....7
Base of metathorax coarsely rugose.....13
7. Mesothorax almost impunctate.....*titusi* Crawford.
Mesothorax closely punctured.....8
8. Truncation of metathorax surrounded by a salient rim.....*fuscipennis* Smith.
Truncation not surrounded by a salient rim.....9
9. Punctures of mesothorax very dense, separated from each other by less than their own diameter.....*bardus* Cresson.
Punctures of mesothorax more sparse, widely separated, at least medially.....10
10. Hind tibiæ, hind and middle tarsi red.....*mellipes* Crawford.
Legs dark.....11
11. Base of metathorax separated from truncation by a sharp ridge.....*coriaceus* Smith.
Base of metathorax without a sharp ridge at rear.....12
12. Wings yellowish, hair bands creamy or yellowish.....*trizonatus* Cresson.
Wings grayish, hair bands white.....*forbesii* Robertson.
13. A band on the middle of first segment ; wings very clear.....*sisymbrii* Cockerell.
No band on first segment ; wings more dusky.....14
14. Rugæ finer, straight, parallel.....*olympicæ* Cockerell.
Rugæ coarse, irregular, not parallel.....15
15. Base of metathorax with a semicircular enclosure.....*pacificus* Cockerell.
Base of metathorax without a semicircular enclosure.....*similis* Smith.
16. Abdomen red.....17
Abdomen not red.....19
17. Pubescence of head and thorax appressed, mesothorax very shiny, almost impunctate ; abdomen with apical segments largely black.....*arizonensis* n. sp.
Pubescence of head and thorax not appressed.....18
18. Facial quadrangle much longer than broad, punctures of head strong.
ovaliceps Cockerell.
Facial quadrangle not much longer than broad, punctures of head indistinct.
svenki Crawford.
19. Tegulæ large, punctured all over.....20
Tegulæ not large and punctured all over.....22
20. Metathorax with a small triangular enclosure.....*nelumbonis* Robertson.
No triangular enclosure on metathorax.....21
21. Mesothorax coarsely punctured.....*kincaidii* Cockerell.
Mesothorax finely punctured.....*glabriventris* Crawford.
22. Legs entirely light testaceous.....*birkmanni* Crawford.
Legs mostly dark.....23
23. Metathorax except basal enclosure covered with pubescence concealing the surface, especially on truncation.....24

- Surface of metathorax not concealed by pubescence.....25
24. Mesothorax shiny, sparsely punctured, not distinctly lineolated.
angustior Cockerell.
Mesothorax dull, closely punctured, distinctly lineolated....*robertsoni* Crawford.
25. Inner spur of hind tibiæ simple, or with saw-like teeth, or very oblique teeth
hardly longer than broad at base.....26
Inner spur with long spines, the basal ones at least being several times as long as
broad at base.....31
26. Mesothorax very dull from lineolation; facial quadrangle longer than broad.
dasiphora Cockerell.
Mesothorax somewhat shiny, facial quadrangle as broad or broader than long...27
27. Base of metathorax coarsely rugose; truncation coarsely sculptured.
arcuatus Robertson.
Base of metathorax finely wrinkled; truncation not coarsely sculptured.....28
28. First abdominal segment closely, strongly punctured, size large, about 9 mm.
robustus Crawford.
First segment sparsely weakly punctured, smaller29
29. Wings clear hyaline, abdomen brownish, apical margins broadly whitish.
amicus Cockerell.
Wings dusky, abdomen darker.....30
30. Face above antennæ closely punctured; metathorax finely irregularly wrinkled.
latifrons Crawford.
Face above antennæ sparsely indistinctly punctured; metathorax with fine irreg-
ularly longitudinal rugulæ.....*peensensis* Crawford.
31. Inner hind spur with many long teeth.....*pectinatus* Robertson.
Inner hind spur with 2-7 teeth.....32
32. Antennæ red beneath; abdomen brown, the first segment strongly transversely
striate.....*subobscurus* Cockerell.
Antennæ darker beneath, abdomen darker, first segment at most finely trans-
versely lineolate33
33. First abdominal segment closely distinctly punctured all over.
fedorensis Crawford.
First segment impunctate or sparsely punctate apically34
34. Stigma brown, usually very dark.....35
Stigma honey color38
35. Base of metathorax finely wrinkled, rounded behind.....36
Base of metathorax rugose, ending at a carina of enclosure37
36. Wrinkles of metathorax more numerous, punctures of mesothorax sparser, weaker,
punctures of face less strong.....*quadrimaculatus* Robertson
Wrinkles of metathorax less numerous, punctures of mesothorax closer, stronger,
punctures of face stronger*divergens* Lovell.
37. Rugæ of metathorax stronger, enclosure semicircular, distinct, punctures of meso-
thorax strong, coarser.....*pectoralis* Smith.
Rugæ of metathorax weaker, enclosure indistinct, punctures of mesothorax
finer, sparser.....*pectoraloides* Cockerell.
38. Larger species over 8 mm.....42
Smaller species not over 7 mm.....39

39. Abdomen bare, no hair patches or appressed pubescence on segments; facial quadrangle slightly longer than broad.....*foxii* Robertson.
Abdomen with hair patches of appressed pubescence on bases of segments; facial quadrangle as broad, or broader than long40
40. Abdomen brown, rather dull, patches large, covering fourth segment entirely.
cordleyi Crawford.
Abdomen darker, shiny, patches of hair smaller, not covering fourth segment....41
41. Smaller, less than 6 mm.; wrinkles of metathorax few, failing apically, wings hyaline.....*nigrescens* Crawford.
Larger, 7 mm.; wrinkles of metathorax more numerous, reaching to apex, wings yellowish*niger* Viereck.
42. Wings clear, hyaline, very ample; wrinkles of metathorax not reaching to apex43
Wings yellowish or dusky, wrinkles or rugæ reaching to apex.....44
43. First abdominal segment very delicately but distinctly punctured; punctures of mesothorax sparser*aberrans* Crawford.
First segment almost entirely impunctate; punctures of mesothorax closer.
galpinsiae Cockerell.
44. Mesothorax dull from strong lineolation45
Mesothorax shiny, lineolation obscure.....46
45. Smaller, hardly 7.5 mm.; abdomen shiny, basal hair patches distinct.
niger Viereck.
Larger, over 8 mm.; abdomen dull, hair patches not apparent..*quebecensis* n. sp.
46. Rugæ of metathorax very coarse, punctures of mesothorax sparser.
truncatus Robertson.
Rugæ of metathorax fine, punctures of mesothorax close.....*cooleyi* Crawford.

The following species are not included in the above table: *fartus* Vachal; *lusorius* Cresson; *crassicornis* Kirby; *discus* Smith which would run to *similis* in the table; *egregius* Vachal which is, I think, *trizonatus* or a closely allied form; *diatretus* Vachal and *synthyridis* Cockerell which would both run close to *foxii* in the table and which are closely related to each other, especially in the males.

The following table will serve to separate all the species known to me in the male sex and the notes to indicate where some of the others will run.

TABLE FOR THE MALES.

1. Apical margins of abdominal segments with strong hair bands.....2
No hair bands on apical margins of segments.....5
2. Wings deep yellowish; legs yellow and red.....*parallelus* Say.
Wings not deep yellow; legs yellow and black.....3
3. Antennæ fulvous beneath.....*ligatus* Say.
Antennæ only obscurely reddish beneath.....4
4. Tegulæ coarsely punctured all over.....*lerouxii* Lepeletier.
Tegulæ not punctured all over.....*farinosus* Smith.

5. Face and legs entirely dark.....6
 Face and legs not entirely dark.....10
6. Tegulae punctured all over; base of metathorax with a triangular enclosure.
nelumbonis Robertson.
 Tegulae not punctured all over; metathorax not with a triangular enclosure.....7
7. Small species, about 5 mm.....8
 Larger species, 7 mm. or more.....9
8. Punctures of mesothorax fine, sparse; rugae of metathorax finer, enclosure indistinct.....*pectoraloides* Cockerell.
 Punctures of mesothorax coarse, close; rugae of metathorax coarse, enclosure semicircular, distinct.....*pectoralis* Smith.
9. Wings clear, pubescence grayish.....*sisymbrii* Cockerell.
 Wings dusky; bands on abdomen not complete.....*olympia* Cockerell.
10. Clypeus light anteriorly, legs dark.....11
 Legs more or less light.....14
11. Head large quadrate, mandibles long, apex of one reaching to base of other.
coriaceus Smith.
 Head and mandibles normal.....12
12. Base of metathorax coarsely rugose.....*similis* Smith
 Base of metathorax finely wrinkled *.....13
13. Wings dusky, metathorax at apex with a carina.....*fuscipennis* Smith.
 Wings yellowish, no carina at apex of metathorax.....*trizonatus* Cresson.
14. Only the tarsi whitish.....15
 Tibiae more or less light.....17
15. Head and thorax smooth, shiny, almost impunctate, pubescence long, abundant.
titusi Crawford.
 Head and thorax closely punctured.....16
16. Smaller, antennae red beneath.....*ruficornis* Crawford.
 Larger, over 8 mm., antennae dark beneath.....*forbesii* Robt.
17. Pubescence of head and thorax appressed, scale-like.....*galpinsiae* Cockerell.
 Pubescence of head and thorax not appressed.....18
18. Antennae short, hardly reaching the tegulae.....*foxii* Robertson.
 Antennae long, reaching to metathorax at least.....19
19. Tubercles dark †.....20
 Tubercles with a light spot. ‡.....23
20. Hardly 5 mm. long.....*quadrimaculatus* Robertson.
 Over 6 mm. long.....21
21. Mesothorax dull from strong lineolation.....*niger* Viereck
 Mesothorax shiny, lineolation obscure.....22
22. Face narrow, metathorax finely rugose.....*pullilabris* Vachal
 Face broad, metathorax coarsely rugose.....*arcuatus* Robertson.

* Here apparently run *diatretus* Vachal and *synthyridis* Cockerell, which are much smaller species.

† Here run *pacificus* Cockerell; *granosus* Vachal; *peraltus* Cockerell; *nigricollis* Vachal, all unknown to me.

‡ Here run *arctous* Vachal; *gularis* Vachal; *nigridens* Vachal which I have not seen.

23. Antennæ reddish beneath, mesothorax dull, the punctures minute; about $6\frac{1}{2}$ mm. long.....*cordleyi* Crawford.
 Antennæ dark beneath, mesothorax shiny, punctures larger, about 8 mm. long...24
 24. Rugæ of metathorax very coarse.....*truncatus* Robertson.
 Rugæ of metathorax fine25
 25. Punctures of mesothorax close, of first abdominal segment distinct.

cooleyi Crawford.

Punctures of mesothorax sparse, of abdomen minute*aberrans* Crawford.

The following, described from the males only, have not been placed: *distinctus* Provancher, *cinctipes* Provancher.

Halictus bardus Cresson.

I have not seen authentic material of this species and the identification may be wrong.

Halictus trizonatus Cresson.

Either this is a very variable species or there are several closely allied species in the western United States, but it will take a large series of specimens to decide this point. *H. egregius* Vachal seems to belong here and also the male described by him as *colatus*.

Halictus similis Smith.

The species which I have always called by this name, is called *discus* by Professor Cockerell, according to notes sent me by Mr. J. H. Lovell. The two species would run out at the same point in the table. Comparison with the types is needed to determine which species is found in the New England states.

Halictus subobscurus Cockerell.

Comparison of the types shows the species described by me as *cockerelli* to be a synonym of this species.

Halictus divergens Lovell.

This is very closely allied to *quadrimaculatus* and may be only a variety.

Halictus diatretus Vachal and Halictus synthyridis Cockerell.

These seem to be very close to each other and to *foxii* but both differ from that species in the males having the legs entirely dark.

Halictus truncatus Robertson.

H. fulgidus Crawford will have to go as a synonym of this species.

Halictus galpinsiae Cockerell.

In the females this species and *H. aberrans* Crawford are very closely related as shown by the table but in the males they are easily separated, the male of *galpinsiae* having appressed pubescence. This seems without any doubt to be the form described by Vachal as *gelidus*

Halictus arizonensis, new species.

♀. — Head and thorax black, shiny, almost impunctate and covered with appressed white pubescence; antennæ beneath, clypeus apically, tubercles and legs reddish testaceous; metathorax finely wrinkled at base, the apex smooth, shiny; wings white, stigma and nervures very light testaceous, only the subcosta dark; hind inner spur with about three long teeth; first two segments of abdomen mostly reddish, rest black medially, laterally reddish, except the last which is entirely reddish; apical margins of segments broadly whitish. Length about $5\frac{1}{4}$ mm.

One specimen from Arizona in the C. F. Baker collection.

Type. — No. 10930, U. S. National Museum.

Halictus quebecensis, new species.

♀. — Black, head and thorax lineolate, dull, facial quadrangle about square, face below antennæ sparsely finely obliquely punctured, punctures opening downward and outward; punctures at sides of face becoming close only some distance above antennæ; rest of face above antennæ closely finely punctured; vertical striæ of the cheeks very apparent; pubescence of head and thorax short, thin, ochraceous; mesothorax finely rather sparsely punctured; median groove well impressed, parapsidal grooves distinct; mesopleuræ rather finely rugulose, metapleuræ anteriorly finely so, posteriorly finely lineolate and only slightly rugulose; base of metathorax with a few rather strong irregular longitudinal plicæ reaching apex; truncation finely lineolate and with a few scattered punctures, surrounded by a salient rim, faint above medially but distinct at upper lateral angles; wings yellowish, darkened apically; nervures and stigma honey-color, subcosta dark; second submarginal broad; third narrowed about one third to marginal; tegulæ dark, with a red center and a narrow light border; legs dark, apical joints of tarsi ferruginous, pubescence of legs ochraceous, becoming reddish on apical joints of tarsi; hind inner spur with about five long teeth; abdomen black, somewhat shiny, with sparse ochraceous pubescence at base and apex, and on apical margins 2-4 laterally and bases 2-3 laterally very faint white hair spots, that surrounding the anal rima reddish; abdomen finely transversely lineolate almost impunctate, under a high power showing a few scattered very fine punctures. Length about 8 mm.

Montreal Island, Quebec, May 21, 1904, received from C. F. Baker; also North Sangus, Mass. (J. C. Crawford coll.).

Halictus ligatus Say.

In the tables the various forms in which the females have the cheeks armed with a spine are not separated from this species, since they are very closely allied and an abundance of material is needed to work out their status. These forms are *armaticeps* Cresson, *capitosus* Smith, *texanus* Cresson, and *townsendi* Cockerell.

Class I, HEXAPODA.

Order II, COLEOPTERA.

NOTES ON LEPTINOTARSA UNDECIMLINEATA
STÅL.

BY FREDERICK KNAB.

WASHINGTON, D. C.

The chrysomelid beetle *Leptinotarsa undecimlineata* Stål was found by the writer in great abundance on the 17th of June, 1905, at Carmen and at other points in the state of Vera Cruz, Mexico, along the railroad running southeastward from Cordoba to Santa Lucrecia on the Isthmus of Tehuantepec. The insects were feeding upon *Solanum torvum* L., and had evidently been stimulated to sexual activity by the first rains of the wet season. Many pairs were found in copula and one cluster of eggs was found, placed on the underside of a leaf as in our *L. decemlineata*. These eggs of *L. undecimlineata* are of an extremely pale yellow, in remarkable contrast with the deep golden yellow, almost orange color of the eggs of *L. decemlineata*. There were no larvæ at this time.

The females are remarkable in the enormously distended abdomen, a condition supposedly peculiar and characteristic in certain genera of Chrysomelidæ. In these females of *L. undecimlineata* the abdomen is swollen to such a degree that it is not only exposed at the sides and between the widely divergent elytra, but a large portion of it protrudes beyond the tips of the elytra. The fourth and succeeding segments project beyond the elytra in a specimen preserved in fluid, taken by Mr. B. Jordan in Alta Vera Paz, Guatemala. On the exposed abdomen the dorsal plates appear as narrow black transverse strips upon the broad white area of the expanded connecting tissue. This condition of the female is even indicated in dried specimens where the elytra have come together over the shrunken abdomen; the sutural margins of the elytra show a slight divergence towards the tip. In the genus *Gastroidea*, noted for the greatly swollen abdomen of the fertile female, there is a modification of the abdominal integument. In some females of *G. cyanea* examined by the writer the entire integument of the abdomen is uniformly pigmented and apparently of the same texture throughout.

The coloration of *Leptinotarsa undecimlineata* is noteworthy. While dried specimens differ but little in this respect from *L. decemlineata*, the ground color of the elytra and thorax of the live specimens is a peculiar very pale greenish gray, and this in the breeding season when the colors should be at their fullest and no immature individuals present.

Dr. E. Dugès has given a detailed description, accompanied by figures, of the early stages of this beetle.* He describes the larva as white in color with black markings. The markings are very different from those of our *L. decemlineata* and the species related to it. The head, legs and prothoracic shield are black. The meso- and meta-thorax bear small black lunar marks at the sides. Segments 1-6 of the abdomen have heavy black lunar marks at the sides which involve the stigmata; on segments 1-5 the ends of the opposing lunules are connected by slender, more or less broken, dorsal lines. Segments 6, 7 and 8 bear quadrate black dorsal areas. These markings vary greatly in amount and all intergrades occur to a form in which only round black stigmatal spots are present. This is the form figured by W. L. Tower.† The pupa is white with only the stigmata black.

The food plant is large and spiny with coarsely hairy leaves. Dr. Dugès gives its name as *Solanum tardum* but as no species of that name is known the above mentioned *Solanum torvum* is doubtless intended.

Dugès has found many of the larvæ, particularly the young ones, more or less covered with the hairs from the leaves of the food-plant. As these hairs are attached very irregularly and are absent in many larvæ he assumes they adhere accidentally during the movements of the larva in feeding and are not adopted as a defensive covering. Tower describes this condition in the following words: "As the small larvæ push about through the abundant trichomes on the leaves of their food plants, a large accumulation of these become lodged among and cemented to the spines by the secretion of the dermal glands, until the larva presents the color and appearance of a ball of dislodged trichomes. . . . The integument in this second stage is smooth and entirely devoid of spines on the tergal and sternal elements of the seg-

* Ann. Soc. Ent. Belg., Vol. XXVIII, pp. 1-6, Pl. I, 1884; Spanish translation: La Naturaleza, Vol. VII, pp. 308-311, Pl. VIII, 1887.

† An investigation of evolution in chrysomelid beetles of the genus *Leptinotarsa*, 1907, pl. 17, figs. 1, 2 and 3.

ments. Owing to the sticky secretion of the dermal glands a deposit of trichomes gathers on the larva in this stage, though, owing to the absence of spines, this deposit is thinner than in the previous stage. . . . In the final stage the increase in the body surface, which is not accompanied by any great increase in the number of dermal glands, results in there being on the body only a very slight deposit of trichomes, if any at all, so that the larvæ are freely exposed on the leaves of their food-plant."*

But by far the most remarkable detail of the account of Dugès relates to the eggs. These are stated to be stalked and laid in groups of 100-150. These eggs are disposed in two layers or stories, those of the upper story being elevated above the others by slender stalks. The group consists first of a row of eggs attached at one extremity by a sort of foot and in contact with each other. This is followed by a second row, parallel to the first, but these eggs are upon slender stalks which raise them above the lower layer. This row is followed by a third one of low-stalked eggs and this by a fourth row of long-stalked ones. The arrangement is somewhat irregular and the long-stalked eggs are less numerous than the others. As far as I am aware no case of eggs upon stalks has ever been recorded for the Chrysomelini by other observers. In the entire group of Chrysomelidæ, with the exception of this single case, stalked eggs are known only from the Clytrini. Nevertheless it can hardly be assumed that Dugès was in error, as in other respects his description of the eggs answers very well for this group and he evidently bred the species from these eggs.

Leptinotarsa undecimlineata is credited to the fauna of the United States on the strength of an old record for southern California which is erroneous beyond a doubt. Mr. G. Beyer, who collected thoroughly in Lower California, writes me that he did not meet this species there. Dr. Dugès' records for the states of Michoacan and Guanajuato probably indicate the northernmost range of this species.

The record of this species from Matamoros in Tamaulipas, near Brownsville, Texas, by C. H. T. Townsend† is based upon an erroneous determination. The specimens are described in detail by Townsend and are unquestionably the species recently characterized by Mr. Chas. Schaeffer as *Leptinotarsa texana*.‡

* *L. c.*, p. 146.

† Trans. Tex. Acad. Sci., Vol. V, pp. 82-84, 1903.

‡ Science Bulletin, Brooklyn Inst. Arts & Sci., Vol. I, p. 239, 1906.